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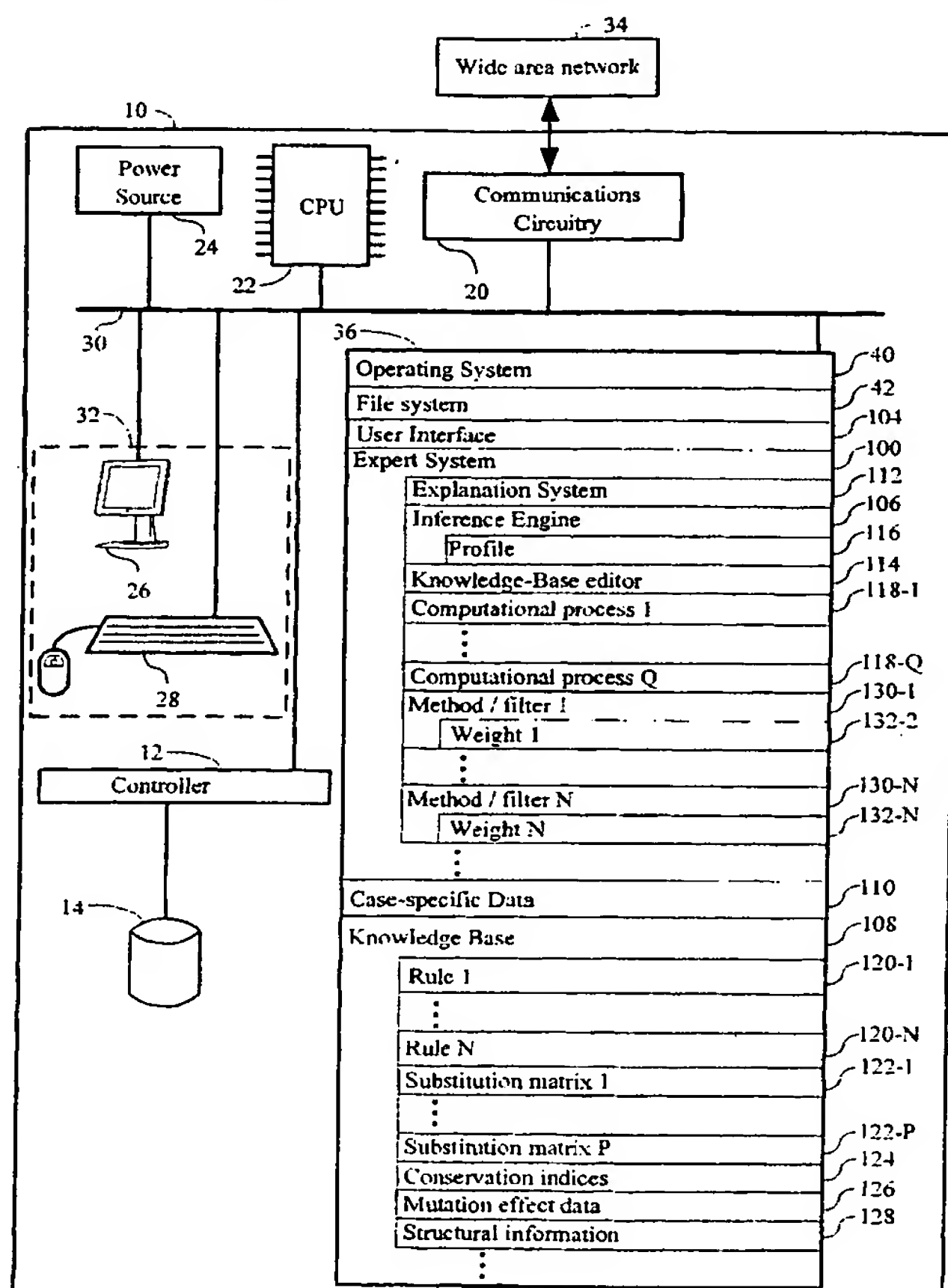
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[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR ANTIBODY ENGINEERING



(57) Abstract: Methods, computer systems, and computer  
program products for antibody engineering. A variant set for  
an antibody of interest is constructed by identifying, using a  
plurality of roles, a plurality of positions in the antibody of  
interest and, for each respective position in the plurality of  
positions, substitutions for the respective position. The plu-  
rality of positions and the substitutions for each respective po-  
sition in the plurality of positions collectively define an anti-  
body sequence space. A variant set comprising a plurality of  
variants of the antibody of interest is selected. A property  
of all or a portion of the variants in the variant set is mea-  
sured. A sequence-activity relationship is modeled between  
(i) one or more substitutions at one or more positions of the  
antibody of interest represented by the variant set and (ii) the  
property measured for all or the portion of the variants in the  
variant set. The variant set is redefined to comprise variants  
that include substitutions in the plurality of positions that are  
selected based on a function of the sequence-activity relation-  
ship.



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